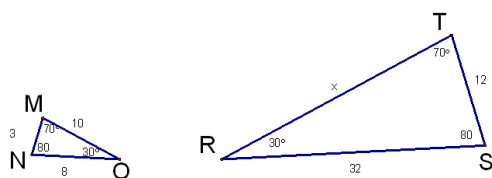
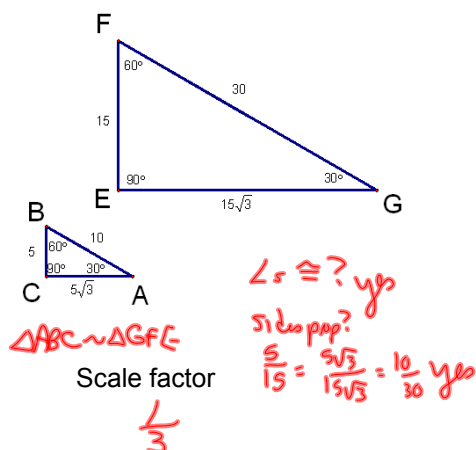


## 6-3 Use Similar ~ Polygons

Two polygons are ~, if

1. corresponding  $\angle$ s are  $\cong$
2. corresponding sides are proportional



$\triangle MNO \sim \triangle TSR$

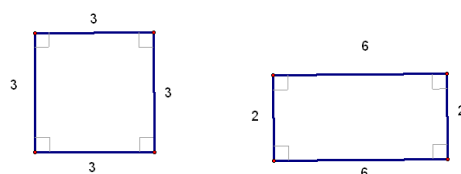
$$\frac{MN}{TS} = \frac{NO}{SR} = \frac{MO}{TR}$$

S.F. 1:4

$$\frac{3}{x} = \frac{8}{32} = \frac{10}{12}$$

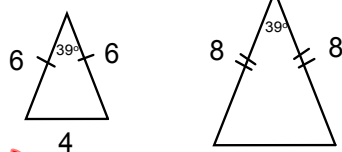
$x = 40$

Are the following figures similar?



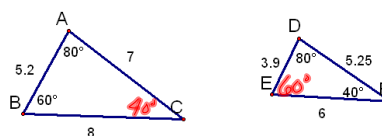
1.  $\angle s \cong ?$  yes  
2. sides prop? no  $\frac{3}{2} \neq \frac{3}{6}$

Are the following figures similar?



$\angle s \cong ?$  yes  
sides prop?  $\frac{6}{8} = \frac{6}{8} = \frac{4}{5\frac{1}{3}}$   
 $.75 = .75 = .75$   
 $4 \div 16 = \frac{1}{4}$   
 $4 \cdot \frac{3}{4} = 3$

Are the following figures similar?



$\angle s \cong ?$  yes  
sides prop? yes  $\frac{5.2}{3.9} = \frac{7}{5.25} = \frac{8}{6} = \frac{4}{3}$

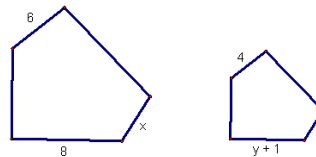
Perimeters?

$P = 20.2$   
 $p = 15.15$

$\frac{20.2}{15.15} = \frac{4}{3}$

Theorem 6.1--Perimeters of Similar Polygons--If 2 polygons are similar, then the ratio of their perimeters is equal to the scale factor.

The pentagons are similar.  
Solve for x and y.



S.F. 3:2

$$\frac{4}{6} = \frac{3}{x} \quad x = 4.5 \quad \frac{4.5}{3} = \frac{8}{y+1} = \frac{6}{4} \quad y = 4\frac{1}{3}$$

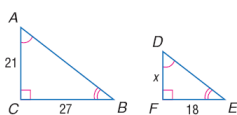
The perimeter of the larger figure is 36 units.

What is the perimeter of the smaller?

$$\frac{36}{P} = \frac{3}{2} \quad P = 24 \text{ units}$$

Each pair of polygons is similar. Write a similarity statement, and find x, the measure(s) of the indicated side(s), and the scale factor.

6.  $\overline{DF}$

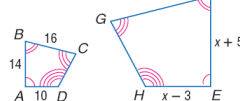


$$\triangle ABC \sim \triangle DEF$$

$$\text{S.F. } \frac{27}{18} = \left(\frac{3}{2}\right)$$

$$\frac{21}{x} = \frac{3}{2} \quad x = 14$$

7.  $\overline{FE}$ ,  $\overline{EH}$ , and  $\overline{GF}$



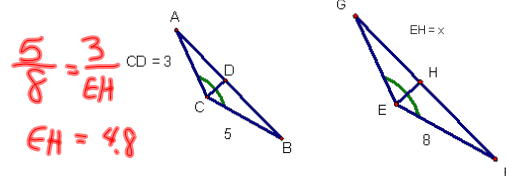
$$ABCD \sim EFGH$$

$$\frac{x+5}{14} = \frac{x-3}{10}$$

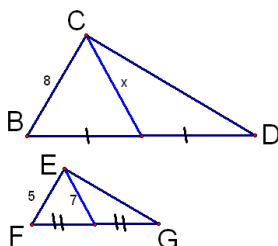
If 2 polygons are similar, then the ratio of any 2 corresponding lengths in the polygons is equal to the scale factor.

e.g. altitudes, medians, angle bisectors

$\triangle ABC \sim \triangle GFE$  What is EH?



$$\frac{5}{8} = \frac{3}{EH} \quad EH = 4.8$$



$\triangle BCD \sim \triangle FEG$

What is the scale factor?

8:5

What is the value for x?

$$\frac{8}{5} = \frac{x}{7} \quad x = 11.2$$

HW

p376-377

#s 3, 6-12, 19, 20, 23-26